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SECURITY INFORMATION

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COUNTRY Germany (Russian Zone)

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SUBJECT Processing of the Nickel to be Used for Fine Wire Drawing at the Kupfer- und Messingwerke, Hettstedt (SAG Marten)

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THIS IS UNEVALUATED INFORMATION

1. Most of the electrode nickel which is the raw material used in the drawing of fine nickel wire at the Kupfer- und Messingwerke Hettstedt (SAG Marten) arrives in railroad cars, each carrying a load of 15 tons. Shipments usually consist of one or two carloads, sometimes three. Some of these cars come from Berlin, and some from Frankfurt/Oder. . . Occasionally, nickel arrives from Berlin by truck. The nickel received from Berlin comes from a place there which, in the plant, is referred to as "Base Berlin".* Its location and character are not known [redacted] the nickel originates in a western country [redacted] and finds its way to the plant 25X1 via Russia and/or Base Berlin.
2. The nickel arrives in the form of thin plates. Large supplies are not stored in the plant. Only those supplies are kept which are needed to keep wire production going without interruption. Upon arrival, the nickel is stored, pending processing, in the plant's metal-storage house. While formerly no special precautions were taken in regard to nickel storage, about six months ago, it was ordered that the nickel is to be stored together with other valuable material in a separate space of the storage house, where it is kept under lock. There are no special guards for stored nickel.
3. Prior to any processing, the nickel is examined spectrographically. One nickel plate is taken at random from every shipment of 15 tons and a piece is cut from it. It is examined in the spectrographic section of the plant's chemical laboratory. As far as can be ascertained, the examination involves spectrographic comparison between samples of the newly-arrived nickel and samples of nickel kept in the plant and whose chemical composition is known. This examination is for the purpose of determining whether or not the new nickel plates contain too much sulfur. If so, the excess sulfur is eliminated by annealing the nickel in hydrogen at a temperature of around 1050° C.

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This is done in muffle furnaces (Muffelöfen) having a muffle cross section of about 2 by 3 meters. Nickel plates are placed into the muffle furnaces in one layer only (not stacked one on top of another), and nitrogen is first passed into the muffle section. The furnace is then heated to a fairly moderate temperature, so that the nitrogen drives the air out of the muffle section. The nitrogen is then blown out and hydrogen is let into the muffle section. The subsequent increase of temperature to 1050° C. eliminates the sulfur.

4. At war's end, foreign workers destroyed the plant's spectrograph. The one now in use in the plant's chemical laboratory belongs to the former Mansfeld AG. The Kupfer- und Messingwerke has been promised that it will receive, sometime in 1952, a new spectrograph to be built by Zeiss, Jena. The one now in use will be returned to the Mansfeld plant.
5. The next step is the melting of the nickel. The nickel plates are cut into pieces 5 by 5 cm. and brought into melting ovens. When the nickel is molten, it is examined for carbon content. The method of examination is the same as is used in the iron industry: a sample of the molten metal is heated in oxygen and the quantity of escaping carbon dioxide is measured. The chemical laboratory has an apparatus for the measuring of the exact carbon content of metals. About a year ago, another of these apparatuses was installed in the plant's foundry.
6. Before the molten metal is poured, it is subjected to one more spectrographic test. This is the final test which will determine whether or not the nickel can be used for the manufacture of fine wire. Should one of the above-mentioned examinations and/or the final spectrographic examination show a chemical composition unfit for fine wire production, the composition of the nickel will be changed, if possible, until the metal becomes fit for this purpose. If this should not be possible, the nickel will be used for other purposes than fine wire drawing.
7. One of the ways to improve the composition of the nickel so as to make it adequate for fine wire drawing was mentioned above: elimination of excessive amounts of sulfur by hydrogen reaction. The main method, however, consists of cutting nickel of the wrong composition with previously-calculated amounts of nickel of a different composition, with the result that the blend will have the desired composition. For instance, should tests reveal that the new nickel has too high or low a percentage of carbon, it is cut with nickel of low or high carbon content in such a proportion that the resulting blend has the desired carbon percentage. Nickel which has excessively high or low percentages of certain substances and which would normally be unusable for wire production, is therefore kept in reserve in the plant's fine wire department, so that it can be used as a cutting agent. After cutting, the blend is examined again spectrographically; the final spectrographic test may therefore consist of a series of such tests. When a sample of the molten metal is subjected to such a test, it is taken out of the molten mass with an iron spoon, the surface of which is about as big as the opening of an ordinary coffee cup and covered with clay.
8. Pouring of the nickel into cylindrical forms 10 cm. in diameter and about 40 cm. in height is done in the chemical laboratory as well as in the foundry. As a rule, this work is performed by three founders. There are, however, twelve well-trained founders at Hettstedt who could expertly carry out this stage of the processing.

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9. After pouring and cooling, the blanks (Rohlinge) go into the mechanical processing section of the plant (Mechanische Bearbeitungsabteilung). Their feeding heads (Gusskoepfe) are turned off there, and their entire surface is smoothed with the aid of lathes. The blanks are kept in this section in a locked but unguarded room until the rolling process starts.
10. A member of the plant police is present during the rolling process which, as a rule, takes place once a week. Rolling is performed by passing the blanks successively through three rolling mills arranged one behind the other. The mills are so-called three high mills (Triowalzwerke). Each consists of three rolls placed vertically above each other (sic). The upper and lower rolls have three passes (Stiche) each, which fit into the six passes of the roll in the middle. Rolling is done "in one heat", i.e. the blanks are heated only once before the rolling process starts. Only four passes of the last rolling mill are used, whereas all six passes of each of the other two mills are used. The result of passing the blanks through all 16 passes is reduction of their diameter to 12 mm. More than a year ago, the plant tried to reduce the diameter by rolling to 6 mm, but these attempts were not successful and were discontinued. After the rolling, every nickel rod is placed into a vise and filed (polished) by hand. Attempts have been made to substitute a blanching or etching agent for the hand polishing but these attempts, which are occasionally renewed, have so far not been successful.
11. Diamonds varying between 10 and 25 carats are used for drawing, depending on the size of the drawing diameter. Diamonds which are used up in one stage of the process are reconditioned so that they can be used in a preceding stage where a larger drawing diameter is employed. Only diamonds with the smallest diameter can not be put to use again in this way. About twenty workers are permanently engaged in the reconditioning of used diamonds. The plant has a permanent reserve of about 1,000 carats, i.e. between 40 and 100 diamonds. They are kept in a safe and strict control is applied to their issuance. Every diamond issued must be signed for by the receiver.
12. All nickel processed at the Kupfer- und Messingwerke is divided into three types: EE-nickel, E-nickel, and refined (raffinade) nickel. EE-nickel is the highest quality; only this type of nickel is used for the drawing of fine wire for the Russian nickel wire screen production program. Although the bulk of EE-nickel goes into fine wire drawing, not all of it does. Occasionally, some of it is used for the manufacture of other products, particularly on orders from the former AEG Berlin.** All other orders are carried out with E-nickel and "raffinade" nickel (lowest quality) as base material. Very infrequently, the plant obtains small nickel deliveries from an unspecified nickel mill in Aue; this material is never used for fine wire drawing.
13. E-nickel and "raffinade" nickel stem from the low quality portions of the deliveries indicated in paragraph 1, in addition to the small deliveries from Aue. With one exception, all nickel scrap resulting from the different work stages in rolling, polishing and drawing is not re-used as EE-nickel but as E-nickel and "raffinade" nickel. The exception consists of the shavings obtained from turning the nickel rods; they are re-used in the fine wire section.

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14. The cutting of nickel with nickel of different composition, as mentioned in paragraph 7, is subject to the following rule: the quantity of nickel used as a cutting agent must not exceed 50 percent of the total blend. If, under this rule, the composition of the nickel cannot be improved so as to meet the requirements of the fine wire program, it will be classed as E-nickel or "raffinade" nickel.

- 25X1 15. [] the Russians no longer attach the same urgency to the fine nickel wire drawing program that they once did. In December 1951, the same amount of fine nickel wire was drawn as in the preceding months, and nothing has indicated that the January 1952 output will decrease. However, the pressure formerly applied by the Russians for strict compliance with production quotas and dates has decreased considerably. The fact that workers employed in the fine drawing section can now obtain leave much more easily than before and that absences due to sickness are no longer subject to the same severe control as before, points in the same direction. [] 25X1
- 25X1 [] these facts can be explained by taking into consideration a reserve supply of about 10 tons of fine wire stored at Tewa-Neustadt, but rather that screen production has gone down or will go down in the near future.

16. Drawing of fine phosphor-bronze wire has decreased considerably since December 1951. The plant now produces about one ton of this wire for every ten tons of nickel wire; in other words, phosphor-bronze wire production has recently decreased by more than two-thirds.

25X1 * [] Comment: Probably Base Technab, Berlin-Lichtenberg, Herzbergstr. 55 (SAG Marten).

25X1 ** [] Comment: Possibly the Elektro Apparate Werke, formerly AEG Treptow, Berlin-Treptow, Hoffmannstr. 15 to 24 (SAG Kabel).

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